

1       We claim:

2       1. A method for producing a pigment, comprising:

3       a) adding a phosphorus compound to an aqueous suspension of titanium dioxide base  
4                    material, then

5       b) adding a titanium compound; and

6       c) adding an aluminum compound.

1       2. The method of claim 1, further comprising:

2       d) adjusting the pH value of the suspension to a value of from 8 to 10.

1       3. The method of claim 1, wherein the added phosphorus compound is an inorganic  
2                    phosphorus compound.

1       4. The method of claim 3, wherein the inorganic phosphorus compound is selected from  
2                    the group consisting of alkali phosphates, ammonium phosphates, polyphosphates,  
3                    and phosphoric acid.

1       5. The method of claim 1, wherein the added phosphorus compound is 0.4 to 6.0% by  
2                    weight calculated as  $P_2O_5$ , referred to  $TiO_2$  base material in the suspension .

1       6. The method of claim 5, wherein the added phosphorus compound is 1.0 to 4.0% by  
2                    weight, calculated as  $P_2O_5$ , referred to  $TiO_2$  base material in the suspension .

1       7. The method of claim 6, wherein the added phosphorus compound is 1.6 to 2.8% by  
2                    weight, calculated as  $P_2O_5$ , referred to  $TiO_2$  base material in the suspension .

1       8. The method of claim 1, wherein the titanium compound added is a hydrolyzable  
2       titanium compound.

1       9. The method of claim 8, wherein the titanium compound added is selected from the  
2       group consisting of titanyl sulphate and titanyl chloride.

1       10. The method of claim 8, wherein the quantity of titanium compound added is 0.1 to  
2       3.0% by weight, calculated as  $TiO_2$ , referred to  $TiO_2$  base material in the  
3       suspension.

1       11. The method of claim 10, wherein the quantity of titanium compound added is 0.1 to  
2       1.5% by weight, referred to  $TiO_2$  base material in the suspension.

1       12. The method of claim 11, wherein the quantity of titanium compound added is 0.1 to  
2       1.0% by weight, calculated as  $TiO_2$ , referred to  $TiO_2$  base material in the  
3       suspension.

1       13. The method of claim 1, wherein the quantity of titanium compound added is 0.1 to  
2       1.0% by weight, calculated as  $TiO_2$ , referred to  $TiO_2$  base material in the  
3       suspension.

1       14. The method of claim 1, wherein the aluminum compound added is alkaline.

1       15. The method of claim 14, wherein the alkaline aluminum compound is selected from  
2       the group consisting of sodium aluminate, alkaline aluminum chloride, and alkaline  
3       aluminum nitrate.

1 16. The method of claim 14, further comprising

2 d) adjusting the pH value of the suspension to a value of from 8 to 10 after step c).

1 17. The method of claim 1, wherein the aluminum compound added is acidic.

1 18. The method of claim 17, further comprising:

2 d) adjusting the pH value to a value between 8 and 10 by adding an alkaline aluminum

3 compound.

1 19. The method of claim 17, further comprising:

2 d) adjusting the pH value to a value between 8 and 10 by adding an alkaline aluminum

3 compound in combination with a base.

4 20. The method of claim 1, wherein during the addition of the aluminum compound, the

5 pH value of the suspension is maintained constant in the range from 2 to 10 by the

6 simultaneous addition of a pH modifying compound.

1 21. The method of claim 20, wherein during the addition of the aluminum compound, the

2 pH value of the suspension is maintained constant in the range from 4 to 9 by the

3 simultaneous addition of a pH modifying compound.

4 22. The method of claim 21, wherein during the addition of the aluminum compound, the

5 pH value of the suspension is maintained constant in the range from 6 to 8 by the

6 simultaneous addition of a pH modifying compound.

1 23. The method of claim 1, wherein the total quantity of the aluminum compounds added

2 is 2.0 to 7.5% by weight, calculated as  $\text{Al}_2\text{O}_3$ , referred to  $\text{TiO}_2$  base material.

1       24. The method of claim 23, wherein the total quantity of the aluminum compounds  
2                    added is 3.5 to 7.5% by weight, calculated as  $\text{Al}_2\text{O}_3$ , referred to  $\text{TiO}_2$  base material.

1       25. The method of claim 1, further comprising

1                    d) adding a magnesium compound.

1       26. The method of claim 25, wherein the magnesium compound added is selected from  
2                    the group consisting of magnesium sulphate and magnesium chloride.

1       27. The method of claim 25, wherein the quantity of magnesium compound added is 0.1  
2                    to 1.0% by weight, calculated as  $\text{MgO}$ , referred to  $\text{TiO}_2$  base material in the  
3                    suspension.

1       28. The method of claim 27, wherein the quantity of magnesium compound added is 0.2  
2                    to 0.5% by weight, calculated as  $\text{MgO}$ , referred to  $\text{TiO}_2$  base material in the  
3                    suspension.

1       29. The method of claim 25, further comprising

2                    e) treating the pigment with an added material in order to influence the final pH value of  
3                    the suspension wherein the final pH value of the pigment is controlled by the pH  
4                    and the quantity of the added material.

1       30. The method of claim 29, where the added material is a nitrate compound.

1       31. The method of claim 30, where the finished pigment contains up to 1.0% by weight  
2                     $\text{NO}_3$

- 1 32. The method of claim 29, further comprising;
  - 2 incorporating the pigment produced into a decorative laminating paper.
  
- 1 33. The method of claim 29, further comprising;
  - 2 incorporating the pigment produced into a resin.
  
- 1 34. The method of claim 1, where the titanium dioxide base material is milled before step
  - 2 a).
  
- 1 35. The method of claim 34, where the titanium dioxide base material is wet-milled and
  - 2 where a dispersant is added during milling.
  
- 1 36. The method of claim 1, further comprising;
  - 2 incorporating the pigment produced into a decorative laminating paper.
  
- 1 37. The method of claim 1, further comprising;
  - 2 incorporating the pigment produced into a resin.
  
- 1 38. The method of claim 25, further comprising;
  - 2 incorporating the pigment produced into a decorative laminating paper.
  
- 1 39. The method of claim 25, further comprising;
  - 2 incorporating the pigment produced into a resin.

1       42. A material, comprising;  
2       a titanium dioxide pigment material; the titanium dioxide comprising a very large plurality  
3       of  $TiO_2$  particles, each particle having a surface;  
4       phosphorus containing material attached to the surface of each particle;  
5       titanium containing material additional to the titanium dioxide material of the surface  
6       attached to the phosphorus containing material; and  
7       aluminum containing material attached to the titanium containing material additional to  
8       the titanium dioxide material of the surface.

1       43. The material of claim 42, further comprising;  
2       magnesium containing material attached to the aluminum containing material.

1       44. The material of claim 42, further comprising;  
2       nitrate containing material attached to the aluminum containing material.

1       45. The material of claim 42, further comprising;  
2       nitrate and magnesium containing material attached to the aluminum containing material.

1       46. The material of claim 42, wherein the resultant particles contain an insignificant  
2       amount of zirconium.

1       47. The material of claim 42 further comprising a decorative laminated paper.

1 48. The material of claim 42 further comprising a resin.